

20/02/12

L-1/T-2/URP

Date : 14/01/2012

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-2 BURP Examinations 2010-2011

Sub : **HUM 177** (Macroeconomics)

Full Marks : 210

Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) What do you mean by Gross Domestic Product (GDP) and Gross National Product (GNP)? Differentiate between nominal and real GDP. (7)

(b) Explain the expenditure, income and value addition methods to measure GDP. (20)

(c) Calculate GDP, GNP, National Income (NI) and Disposable Income (DI) from the following data: (8)

Consumption	1600
Government Expenditure	680
Investment	800
Depreciation	580
Corporate retained earnings	450
Indirect business taxes	220
Net foreign factor income	228
Net export	410
Transfer payment	356

2. (a) Determine the equilibrium income and show it graphically from the following information: (12)

$$C = 30000 + 0.70 Y_d, I = 30000, G = 27000, T = tY = 0.25 Y \text{ and } R = 0$$

Write the saving equation from the given consumption equation in question and then show the saving and dissaving in the figures.

(b) Mention the factors, which affect export, import and net export. (8)

(c) Draw a circular flow of income and expenditure in a four sector economy and prove that in a circular flow injections are always equal to leakages. (15)

3. (a) Explain the determinants of investment and consumption expenditure. (10)

(b) What is multiplier? Why is multiplier greater than one? Explain "higher the marginal propensity to consume (MPC), higher the value of multiplier". Find out the value of multiplier from the following equation: (10)

$$C = 800 + 0.9 Y$$

(c) What is inflation? Explain the causes of different types of inflation and then compare the effects of these inflation on the economy. (15)

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HUM 177

4. (a) Why does aggregate demand curve (AD) slope downward? (5)
(b) Explain the shapes of short run and long run aggregate supply curve. Mention the factors, which affect only the short run aggregate supply of any economy? (10)
(c) Show the impacts of the following changes if any on either 'aggregate demand' or 'short run aggregate supply' or 'long run aggregate supply' of any economy: (20)
(i) Depletion of raw materials
(ii) Decreasing incentives
(iii) Increasing expected future profit
(iv) Decreasing wages
(v) Domestic currency (taka) depreciates against other currencies

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) Derive the mathematical equations of IS and LM curves and explain the relationship among the variables. (8)
(b) How would you derive IS and LM curves graphically? (15)
(c) What is liquidity trap? How does the effectiveness of fiscal and monetary policy depend on the slope of the LM curve? (12)
6. (a) Derive the aggregate demand curve from the IS-LM model. (12)
(b) "The flatter the LM curve, the steeper the AD curve", do you agree with the statement? Explain. (13)
(c) What happens to the AD curve if government expenditure(G) increases? (10)
7. (a) What is unemployment? Define frictional, structural and cyclical unemployment. (7)
(b) Explain "implicit contract theory" and "insider-outsider theory" of unemployment. (20)
(c) What is business cycle? Explain different phases of a business cycle. (8)
8. (a) What would ~~you~~ be the impact of expansionary and contractionary fiscal and monetary policies on employment, output and interest rate? (20)
(b) Given that (10)
Demand for money = $40Y - 10i$
Real money supply = 20000
Investment = $200 - 0.50i$
Consumption = $200 + 0.75Y$
Government expenditure = 400
where i = interest rate Y = income
Derive the IS and LM equations. Calculate the equilibrium level of income and interest rate and show the result in a graph.
(c) Write short notes on national budget of Bangladesh for the fiscal year 2011-2012. (5)
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L-1/T-2/URP

Date : 19/01/2012

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-2 BURP Examinations 2010-2011

Sub : **PLAN 113** (Fundamentals of Planning)

Full Marks : 140

Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) What is 'spatial planning'? Briefly discuss the purpose of spatial planning. (5+12 $\frac{1}{3}$ =17 $\frac{1}{3}$)
(b) Mention two indicators for each of economic, social and physical development. (6)

2. (a) "The national level planning process prepares plan assuming the whole country in a single point in space". Explain. (8)
(b) Briefly explain the planning approach, based on which the Dhaka Metropolitan Development Plan (DMDP) 1995-2015 was prepared. (15 $\frac{1}{3}$)

3. (a) What do you understand by 'theory of physical determinism'? How could you relate the 'theory of physical determinism' to traditional approach of planning? (7 $\frac{1}{3}$)
(b) "Every system is a sub-or super-system of other system". Explain the statement from planning perspective. (10)
(c) What do you understand 'activity' and 'conceptual' system? (6)

4. Write short notes on the following
(a) Patrick Geddes' formula and three-stages of planning process. (15 $\frac{1}{3}$)
(b) Social goal and social justice as an objective of spatial planning. (8)

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) "Planning involves making decisions about how to make best use of the available resources" – explain this statement. (9)
(b) Briefly discuss the stages of planning process. (14 $\frac{1}{3}$)

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PLAN 113

6. (a) Which planning approach would you follow if you are appointed as a project director of the program titled "Hygiene and sanitation improvement project in slum areas"? State arguments in favour of your chosen approach. **(15 1/3)**
- (b) In the context of Bangladesh, discuss the scope of practice of Normative Planning procedure. **(8)**
7. (a) What are the major characteristics of "Disjointed Incrementalist" planning procedure? **(11 1/3)**
- (b) Discuss about six ethical principles which you think should be included in the ethical code of planning professional of Bangladesh. **(12)**
8. (a) Write a short note on "Advocacy Planning". **(10)**
- (b) "Participation without redistribution of power is a frustrating process". Briefly discuss different levels of participation in planning process. **(13 1/3)**
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L-1/T-2/URP

Date : 25/01/2012

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY, DHAKA

L-1/T-2 BURP Examinations 2010-2011

Sub : ARCH 145 (Elements of Architecture)

Full Marks : 140

Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer **Q. No. 1** and any **TWO** from the rest.

1. Write short notes on any two of the following: **(15×2=30)**
 - (a) Primary elements
 - (b) Primary shapes
 - (c) Primary solids
2. How horizontal elements can define a space? Explain with sketches. **(20)**
3. Elaborate on different spatial relationships. **(20)**
4. Briefly describe "Transformation of Form". Explain additive forms with sketches. **(5+15=20)**

SECTION – B

There are **FOUR** questions in this section. Answer **Q. No. 5** and any **TWO** from the rest.

Use sketches where necessary.

5. Write short notes (any two) on the following: **(22)**
 - (a) The Parthenon
 - (b) The architectural characteristics of Gothic Architecture
 - (c) Significant features of impressionist paintings
 6. Critically discuss 'Realism' in reference to the paintings of Francois Millet and Gustave Courbet. **(24)**
 7. Define A 'Bengali House' – the traditional house form in terms of: **(24)**
 - (i) Its organization
 - (ii) Land and House form
 - (iii) Climate and House form
 8. Briefly explain the main features of building design criteria for 'Warm-Humid' climate in terms of: **(24)**
 - (i) Form and Planning
 - (ii) Roofs and Walls
 - (iii) Air flow, opening and ventilation
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Sub : **MATH 103** (Mathematics II : Calculus and Differential Equation)

Full Marks : 140

Time : 3 Hours

The figures in the margin indicate full marks.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – AThere are **FOUR** questions in this section. Answer any **THREE**.

1. (a) Test whether $\lim_{x \rightarrow \frac{\pi}{2}} \frac{e^{\tan x} - 1}{e^{\tan x} + 1}$ exist or not. (8 1/3)

(b) If the function $f(x) = \begin{cases} x^2 + 1; & \text{when } x < 0 \\ 1; & \text{when } 0 \leq x < 1 \\ 2 - x; & \text{when } x \geq 1 \end{cases}$

discuss the continuity of $f(x)$ at $x = 1$ and the differentiability of $f(x)$ at $x = 0$. (15)

2. (a) If $y = \frac{1}{x^2 + 16}$, find y_n . (8 1/3)

(b) If $y = a \cos(\log x) + b \sin(\log x)$, then show that (8)

$$x^2 y_{n+2} + (2n + 1) x y_{n+1} + (n^2 + 1) y_n = 0$$

(c) Show that the maximum value of $x + \frac{1}{x}$ is less than its minimum value. (7)

3. Workout the following integrals: (8+7+8 1/3)

(i) $\int \frac{\sqrt{\tan x}}{\sin x \cos x} dx$

(ii) $\int \frac{dx}{(1 + x^2) \sqrt{\tan^{-1} x + 3}}$

(iii) $\int \frac{\cos x}{2 \sin x + 3 \cos x} dx$

4. (a) Show that $\int_0^{\pi} \frac{x dx}{a^2 \cos^2 x + b^2 \sin^2 x} = \frac{\pi^2}{2ab}$. (13 1/3)

(b) Find the area bounded by the curve $y^2 = \frac{x^3}{(2a - x)}$ and its asymptote. (10)

MATH 103**SECTION - B**

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) Form the differential equation of least order by eliminating arbitrary constants A, B and C from the equation: $y = Ae^{-2x} + Be^{3x} + C$. (8)
- (b) Solve: $\frac{dy}{dx} = (4x + y + 1)^2$. (7 $\frac{1}{3}$)
- (c) Solve: $\frac{dy}{dx} = \frac{y}{x} \tan \frac{y}{x}$. (8)
6. Solve the following ODE's:
- (a) $(x + 2y - 1) dx + (2x + 4y - 3) dy = 0$, $y(0) = \frac{1}{2}$ (8)
- (b) $(e^{2y} - y \cos xy) dx + (2xe^{2y} - x \cos xy + 2y) dy = 0$ (7 $\frac{1}{3}$)
- (c) $(y^2 + xy^3) dx + (5y^2 - xy + y^3 \sin y) dy = 0$ (8)
7. Solve:
- (a) $\frac{d^3y}{dx^3} - 3\frac{d^2y}{dx^2} + 3\frac{dy}{dx} - y = xe^x + e^x$ (7)
- (b) $4x^2 \frac{d^2y}{dx^2} + 17y = 0$, $y(1) = -1$, $y'(1) = 0$ (9)
- (c) $(D^3 - 2D + 4)y = e^{2x} \sin x$ (7 $\frac{1}{3}$)
8. (a) Solve: $y(x^3 - y) dx - x(x^3 + y) dy = 0$. (8)
- (b) Show that $y = e^{-\int P(x)du} \left[\int Q(x)e^{\int P(x)du} du + C \right]$, $C \in \mathbb{R}$, is a one-parameter family of solution of $\frac{dy}{du} + P(x)y = Q(x)$. (7 $\frac{1}{3}$)
- (c) A 12-volt battery is connected to a series circuit in which the inductance is 2 henrys and resistance is 20 ohms. Determine the current $i(t)$ if the initial current is zero. (8)
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The figures in the margin indicate full marks.

Provide sketches where required.

USE SEPARATE SCRIPTS FOR EACH SECTION

SECTION – A

There are **FOUR** questions in this section. Answer any **THREE**.

1. (a) How can you solve the problem in a chain surveying when your chaining is interrupted by obstacles? (6)
- (b) Write down the advantages of traverse surveying over chain surveying. The table below gives the lengths and bearings of the lines of a traverse ABCDE, the length and bearing of EA having been omitted. Calculate the length and bearing of the line EA. (4+16=20)

Line	Length (m)	Bearing
AB	204.0	87°30'
BC	226.0	20°20'
CD	187.0	280°0'
DE	192.0	210°80'
EA	?	?

- (c) How can you plot a compass traverse in a drawing sheet with the help of latitudes and departures? (9)
2. (a) What are the advantages of intersection method over other methods of plane table surveying? (5)
- (b) How can you fix the instrument station of a plane table through the tracing paper method? Describe it with a neat sketch. (12)
- (c) The following staff readings were observed successively with a level, the instrument having been moved after third, sixth and eighth readings: (18)

2.228; 1.606; 0.988; 2.090; 2.864; 1.262;

0.602; 1.982; 1.044; 2.684 meters

Enter the above readings in a page of a level book and calculate R.L. of points if the first reading was taken with a staff held on a bench mark of 432.384 m.

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3. (a) A survey was commenced at 7:30 am when the temperature was 65 °F with a 100 ft steel tape which was corrected. After chaining a distance of 12650 ft the work was suspended at 1:30 pm when the temperature was 102 °F. Find the correct distance. Take the co-efficient of expansion of steel 6.25×10^{-6} per deg.°F. (10)
- (b) Which earth effect make objects appear to be lower than they really are in a levelling operation? Describe it with a neat sketch. How can you solve such a problem? (6+7=13)
- (c) During levelling operation, how can one adjust the line of collimation of the level instrument? Describe it with neat sketch. (12)
4. (a) What types of error can occur during a chain surveying? (8)
- (b) Draw a chart to show the conversion of W.C.B to R.B. (4)
- (c) A tower stands on the ground, the level of which is 40.722 ft above datum. From a theodolite 58 ft away horizontally an angle of elevation of $12^{\circ}42'$ is obtained. If the height of the instrument is 1.43 ft and the R.L. of the instrument station is 44.502 ft, how high is the tower? (12)
- (d) What is orientation by back sighting? Why this process is more preferable over the process of orientation by a through compass? (8+3=11)

SECTION – B

There are **FOUR** questions in this section. Answer any **THREE**.

5. (a) Define cartography. How the earth can be mapped? (7)
- (b) What do you mean by latitude and longitude? Discuss with diagrams. (10)
- (c) "Simple conical projection with two standard parallels is, indeed, an improvement over the simple conic with one standard parallel" – Explain why? (6)
- (d) Write down the differences between photomap by camera and photomap by scanner with necessary diagrams. (12)
6. (a) What are the differences between relative position and absolute position? (7)
- (b) A boy scout is marching at the rate of 9 miles per hour. Draw a Time scale for a map of 1 inch = 3 miles with primary and secondary divisions. (15)
- (c) What is the purpose of computing shape compactness index? (5)
- (d) What conditions must be met to measure the height of a feature using 'Image Displacement Method'? (8)

PLAN 161

7. (a) Two maps are drawn with two different scales of 4 centimeter to the kilometer and 4 kilometer to the centimeter. Which one is small scale map and why? (7)
- (b) Construct a graticule on the simple conic projection with one standard parallel on a 1:500,000,000 scale at the interval of 10° for an area stretching between 45° N – 85° N and 5° E – 45° E (Given that, radius of the earth is 4000 miles). (20)
- (c) Discuss 'Routed Linear Cartogram' with example. (8)
8. (a) If a building is known to be 60 meter high and it casts a shadow of two millimeters long on a photo with a scale of 1:15000, what is the angle of the sun? (7)
- (b) Which one is the smallest scale map among the maps classified by scale? (7)
- (c) Write short notes on the following (Any three): (3×7=21)
- (i) Universal Transverse Mercator Grid,
 - (ii) Components of GPS,
 - (iii) Photomap Mosaic,
 - (iv) Cylindrical Map Projection.
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